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EXAMINER	
WU, JIANYE	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/699,242	NALAWADI ET AL.	
	Examiner	Art Unit	
	Jianye Wu	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,6,8-23 and 25-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6,8-23 and 25-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/11/08 has been entered.

Response to Amendments/Arguments

Applicant's arguments filed on 12/11/08 regarding claim 1, 13, 22 and 28 have been considered but are not persuasive. Applicant's arguments on claim 2, 4-6, 8-12, 17-21, 24, 28, 32 are moot because all the independent claims have been amended.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. **Claim 1, 3, 13-16, 22, 28-30** and **32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. (US 20020052990 A1, hereinafter **Chan**) in view of MacDonald et al. (US 5894577, hereinafter **MacDonald**).

For **Claim 1, 13, 22, 28**, Chan discloses a method, a device, an article of manufacture and a system comprising:

a bandwidth manager (memory controller 122 of FIG. 1, which has total control over the memory and is able to obtain a total or part of memory bandwidth any time) configured to apportion at least a portion of a total memory bandwidth available for a time period, amongst a plurality of bandwidth requests for the time period for a plurality of isochronous devices (CD-ROM, DVD, ZIP drive and etc, lines 12-13 of [0076]; or 114 and 138 of FIG. 1), according to a power managed profile (PMRs, line 4 of [0041]) and a plurality of data rate requirements (lines 8-10 of [0049]) associated with the plurality of isochronous devices;

the power managed profile causes the bandwidth to be apportioned amongst the requests (bus controller 124 has total control over bandwidth allocation as shown in FIG. 1);

a data transmission manager (controller 124 of FIG. 1) to delay transmission of a first isochronous data transmission having media data to be transmitted to or from a first of the isochronous devices, and append the first isochronous data transmission with a second isochronous data transmission having media data to be transmitted to or from the first isochronous device into a combined data transmission (data streams from CD-

ROM, DVD, ZIP drive and etc, lines 12-13 of [0076] shown in 138 in FIG. 1 all goes through the Audio Interface IC 102 of FIG. 1), according to a data transmission policy (all the transmission are done within the constrain of PMRs, line 4 of [0041] or ACPI, [0009]-[0020]), a data bus (bus 116 of FIG. 1) coupled between the memory and the plurality of isochronous devices, wherein the combined data transmission is read from or written to the memory via the data bus (bus between 120 and 122 of FIG. 1);

apportioning includes dividing the total memory bandwidth into a plurality of portions of the total memory bandwidth and satisfying a plurality of bandwidth requests (such as 114 or 138 for only part of the total memory bandwidth, notice that the device 114 may store data for a plurality of devices such as hard driver and optical driver [0037], which can produce a plurality of bandwidth requests) each with at least one of the plurality of portions of the total memory bandwidth (by 122 or 124 or in combination of FIG. 1 as it is designed to controls time duration and bandwidth for all the devices that needs to access to the data bus).

Chan is silent on the power managed profile based at least on interrupt driven asynchronous activity and isochronous data communication.

MacDonald discloses interrupt driven ("interrupt driven", col, 1, line 35-38) which reduces power assumption ("stopping unused clock signals and/or removing power from inactive circuit portions", col. 1, line 35-38).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the power managed profile disclosed by Chan with

the interrupt driven technique disclosed by MacDonald in order to save power assumption.

As to **Claim 3**, Chan and MacDonald disclose the method of claim 1, wherein obtaining a plurality of bandwidth requests (CPU 120 of FIG. 1 controls 122 or 124 of FIG. 1 in generating requests) includes polling a plurality of isochronous applications (e.g., software programs playing various audio and video streams from IDE devices, lines 11 of [0076]) corresponding to the plurality of isochronous devices.

For **Claim 14**, Chan and MacDonald disclose the device of claim 13, wherein the bandwidth manager is coupled to the plurality of isochronous devices to manage data communication between the plurality of isochronous devices and a memory (RAM, 120 of FIG. 1).

As to **Claim 15**, Chan and MacDonald disclose the device of claim 14, wherein a duration of the time period depends on a status of a processor (120 of FIG. 1, where CPU controls 122 and 124).

As to **Claim 16**, Chan and MacDonald disclose the device of claim 14, wherein the plurality of isochronous devices are related to the plurality of isochronous applications run by a processor (120 of FIG. 1), and wherein the data rate requirements are associated with a plurality of time delay (caused by122 or 124 of FIG. 1) compliance limits for the plurality of isochronous devices.

As to **Claim 29**, Chan and MacDonald disclose the system of claim 28;

Chan further discloses the data transmission policy further comprising: identifies a plurality of transmission time periods during which to transmit a plurality of combined

isochronous data packet transmissions (as shown in claim 28) and the combined data packet transmission (as suggested by FIG. 1, where the controller 124 has the total control of transmission, including scheduling transmission of different traffic at different time) between one of a transmission time of an asynchronous data packet transmission (data stream from storage device 114 of FIG. 1), a third isochronous data packet transmission (data stream from Digital Audio Gen. 129 of FIG. 1).

Chan is silent on selecting a time to transmit the combined data packet transmission of an asynchronous data with an isochronous data packet transmission and a transmission time for one data transmission of the plurality of combined isochronous data packet transmissions.

However, since the controller (124 of FIG) has total control of transmission as shown in FIG. 1, it can control the transmission according to user requirements, including the case of selecting a time to transmit the combined data transmission of an asynchronous data with an isochronous data transmission and a transmission time for one data transmission of the plurality of combined isochronous data transmissions.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine isochronous data transmissions with opportunistic data transmission for the benefit of efficiency.

As to **Claim 30**, Chan and MacDonald disclose the system of claim 29.

Chan does not explicitly disclose wherein the data transmission policy further: transmits an opportunistic data transmission prior to expiration of a transmission time

period, the opportunistic data transmission having media data from at least two isochronous data.

However, since the controller (124 of FIG) has total control of transmission as shown in FIG. 1, it can control the transmission according to user requirements, including the case of transmitting an opportunistic data transmission prior to expiration of a transmission time period, the opportunistic data transmission having media data from at least two isochronous data.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to transmit an opportunistic data transmission prior to expiration of a transmission time period, the opportunistic data transmission having media data from at least two isochronous data in order to meet user's requirements.

As to **Claim 32**, Chan and MacDonald disclose the method of claim 1, Chan further discloses the power managed profile is based on power usage policy (as taught in claim 1) for a processor, RAM memory (CPU & RAM 120), hard drive (Storage device 114), processor logic, memory controller (122), chipset logic and data bus use (124 of FIG. 1).

3. **Claims 2, 4, 6, 8-12, 17-21, 23-27** and **34-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of MacDonald, further in view of NA et al (US 2001/0028780, hereinafter **NA**).

As to **Claim 2, 23** and **36** Chan and MacDonald disclose claim 1 and 22, Chan further discloses the method comprising:

determining a data transmission policy based on the power managed profile (PMRs, line 4 of [0041]) and the plurality of bandwidth requests (122 or 124 of FIG. 1), the data transmission policy to manage delaying (cause a delay, line 11 of [0080]) transmission of a first isochronous data transmission.

Chan **does not explicitly disclose** combining data of the first isochronous data packet transmission with data of a second data transmission into a combined data transmission.

NA teaches combining data of the first isochronous data transmission with data of a second data transmission into a combined data transmission (a multi-program transport stream isochronous **packets**, lines 2-3 of claim 10; where each program has a isochronous, and streams from multi-programs are combined to form a new stream). Also to a person skilled in the art, Chan's disclosure actually implicitly teaches the combination of 2 isochronous data streams into one (an isochronous data stream, such as audio, from 114 of FIG. 1 and another isochronous data stream, such as video, from 138 of FIG. 1 into one data stream in data bus 116 of FIG. 1).

Chan and NA teach are in the same field of endeavor, NA discloses additional functionalities and features such as multi-program.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use NA to modify Chan to combine two isochronous data stream into one data stream due to benefit of more functionalities and features to the system.

As to **Claim 4** and **24,** Chan and MacDonald disclose claim 1 and 22, wherein apportioning includes dividing the total memory bandwidth into a plurality of portions of the total memory bandwidth and satisfying at least two of the plurality of bandwidth requests (such as 114 or 138 for only part of the total memory bandwidth) each with at least one of the plurality of portions of the total memory bandwidth (by 122 or 124 or in combination of FIG. 1 as it is designed to controls time duration and bandwidth for all the devices that needs to access to the data bus).

Chan **does not explicitly disclose** apportioning bandwidth by combining the data of at least two isochronous data packet transmissions.

NA teaches combining data of the first isochronous data transmission with data of a second data transmission into a combined data transmission (a multi-program transport stream isochronous **packets**, lines 2-3 of claim 10; where each program has a isochronous, and streams from multi-programs are combined to form a new stream). Also to a person skilled in the art, Chan's disclosure actually implicitly teaches the combination of 2 isochronous data streams into one (an isochronous data stream, such as audio, from 114 of FIG. 1 and another isochronous data stream, such as video, from 138 of FIG. 1 into one data stream in data bus 116 of FIG. 1).

Chan and NA teach are in the same field of endeavor, NA discloses additional functionalities and features such as multi-program.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use NA to modify Chan to combine two isochronous data

stream into one data stream due to benefit of more functionalities and features to the system.

For **Claim 5 and 17**, Chan discloses a method and a device comprising:

delaying (cause a delay, line 11 of [0080]; 124 of FIG 1 controls data traffic and it will delay a isochronous data transmission if its bandwidth request can not be granted) transmission of a first isochronous data transmission (a data stream from 118 or 138 of FIG. 1) having media data to be transmitted to or from a first isochronous device (one of IDE devices, such as 114 or 138 of FIG. 1); selecting a time to transmit the combined data transmission, wherein selecting includes selecting between a transmission time of an opportunistic data transmission and a transmission time of a combined isochronous data transmission (FIG. 1, where both opportunistic data [such as data from the keyboard 112] and the isochronous data above need to be sent, therefore selecting a time to transmit what type of data is made).

Chan **does not explicitly disclose** appending the first isochronous data transmission with a second isochronous data transmission having media data to be transmitted to or from the first isochronous device into a combined data transmission, wherein appending is performed according to a data packet transmission policy.

NA teaches combining data of the first isochronous data transmission with data of a second data transmission into a combined data transmission (a multi-program transport stream isochronous **packets**, lines 2-3 of claim 10; where each program has a isochronous, and streams from multi-programs are combined to form a new stream). Also to a person skilled in the art, Chan's disclosure actually implicitly teaches the

combination of 2 isochronous data streams into one (an isochronous data stream, such as audio, from 114 of FIG. 1 and another isochronous data stream, such as video, from 138 of FIG. 1 into one data stream in data bus 116 of FIG. 1).

Chan and NA teach are in the same field of endeavor, NA discloses additional functionalities and features such as multi-program.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use NA to modify Chan to combine two isochronous data stream into one data stream due to benefit of more functionalities and features to the system.

As to **Claim 6**, Chan and NA in combination disclose the method of claim 5, Chan further discloses the method comprising: identifying a plurality of transmission time periods during which to transmit a plurality of combined isochronous data transmissions, each combined isochronous data transmission having media data (129 of FIG. 6) from at least two isochronous data transmissions (412 of FIG. 6).

As to **Claim 8**, Chan and NA in combination disclose the method of claim 6.

Chan further discloses the opportunistic data transmission comprising one of an asynchronous data transmission (such as data from keyboard 112 of FIG. 1);

Chan does not explicitly disclose that the opportunistic data transmission comprises a third isochronous data packet transmission.

However, by definition, the opportunistic data transmission may comprise any data transmission, including the isochronous data transmission (though without

guarantee of the desired QoS), which does not interfere with other isochronous data transmission not included in the opportunistic data packet transmission.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine isochronous data packet transmissions with opportunistic data packet transmission comprising one of an asynchronous data transmission and a third isochronous data packet transmission for the benefit of efficiency.

As to **Claim 9**, Chan and NA in combination disclose the method of claim 5,

Chan further discloses the method comprising: the data packet transmission policy reduces a first frequency of transmission times related to transmitting the first isochronous data packet transmission to a less frequent second frequency of transmission times related to transmitting the combined data packet transmission (the frequency of transmitting the first isochronous data may be reduced within the boundary of time requirement for the isochronous data by definition of isochronous data packet transmission, as suggested by FIG. 1 since they share the same bus).

As to **Claim 10**, Chan and NA in combination disclose the method of claim 5, Chan further discloses the method comprising: one of reading media data of the combined data packet transmission from a memory (part of RAM 120 of FIG. 1) and writing media data of the combined data packet transmission to a memory (another part of RAM 120 of FIG. 1).

As to **Claim 11**, Chan and NA in combination disclose the method of claim 5,

Chan does not explicitly disclose the method further comprising: delaying transmission of the second isochronous data packet transmission.

However, the data packet transmission policy (set by 124 of FIG. 1 of Chan) can easily be set (because controller 124 has total control of the transmission as shown in FIG. 1) to delay transmission of the second isochronous data packet transmission for the benefit of saving power assumption (line 3 of [0003]), as soon as the time requirements for the second isochronous data packet transmission are met.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to delay transmission of the second isochronous data packet transmission for the benefit of saving power assumption.

As to **Claim 12**, Chan and NA disclose the method of claim 5,

Chan does not explicitly disclose the method further comprising: transmitting the combined data packet transmission prior to expiration of a time delay compliance limit.

However, the data packet transmission policy (set by the controller 124 of FIG. 1 of Chan) can easily be set to transmitting the combined data packet transmission prior to expiration of a time delay compliance limit to ensure the proper transmission (because the controller 124 has total control of transmission as suggested by FIG. 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to delay transmission of the second isochronous data packet transmission for the benefit of reliable transmission.

Claim 18 is rejected because it is the corresponding device claim of claim 8.

As to **Claim 19**, Chan and NA disclose the device of claim 18, wherein the third isochronous data transmission is to be transmitted to or from a second isochronous device (another software program running on the computer 100 of FIG. 1 requiring a video/audio data stream from another IDE device).

As to **Claim 20**, Chan and NA disclose the device of claim 17, further comprising: one of a processor (CPU 120 of FIG. 1) and a (data bus 116 of FIG. 1) coupled to a memory (RAM 120 of FIG. 1), wherein the combined data transmission is read from or written to the memory via the processor or the data bus (computer system 100 running software program for playing/recording video/audio data streams).

As to **Claim 21**, Chan and NA disclose the device of claim 17, wherein the media data of the first and second isochronous data transmission include one of digital audio data and digital video data (computer system 100 running software program for playing/recording video/audio data streams).

Claims 25-27 are rejected because they are the corresponding article of manufacture claims of claims 5-7.

As to **claim 34**, Chan in view of MacDonald and NA discloses claim 2, Chan further discloses the data transmission policy (policy implemented by controller 124 of FIG. 1) to manage delaying transmission of a third and a fourth isochronous data packet transmission (keyboard and mouse, [0037] in view of 112 of FIG. 1), and to manage combining data of the third and fourth isochronous data packet transmissions with data of an asynchronous data packet transmission (asynchronous and isochronous data packet transmissions are all merged via controller 124 to system bus 116 as shown in

FIG. 1, where asynchronous data transmissions are delay to ensure isochronous packet data transmissions to be delivered in synchronization; notice that data are most commonly transmitted in packets in a digital system) into the combined data packet for transmission (suggested by “digital computer bus" of [0025], because digital data are transmitted in data packet, which is common knowledge in the art).

As to **Claim 35**, Chan and MacDonald disclose claim 5 wherein appending further comprises: appending an asynchronous data packet transmission with the first and second isochronous data packet transmissions to form the combined data packet transmission into the combined data packet for transmission (suggested by “digital computer bus" of [0025], because digital data are transmitted in data packet, which is common knowledge in the art).

4. **Claim 31** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of MacDonald, further in view of Hsu (US 6288896 B1, hereinafter **Hsu**).

As to **Claim 31**, Chan and MacDonald disclose the method of claim 1, but are silent on the power managed profile is based on maximizing the life of a battery of a computer.

In the same field of endeavor, Hsu teaches maximizing the life of a battery of a computer (col. 1, line 28-30, “battery-powered computers, where maximum battery life is desirable”).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Chan and MacDonald’s teaching to setup power

managed profile based on maximizing the life of a battery of a computer as taught by Hsu in order to requirements of users.

5. **Claim 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of MacDonald, further in view of Wu et al. (US 20030206520 A1, hereinafter **Wu**)

As to **Claim 33**, Chan and MacDonald disclose the method of claim 1, but do not explicitly discloses the power managed profile apportions the bandwidth based on a balance between a total power available and a minimum bandwidth requirement of individual entities submitting the requests and including the isochronous devices.

Wu teaches balancing between power and bandwidth requirement ("optimal and flexible balance between radio bandwidth, terminal storage and power usage", [0047]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Chan and MacDonald's teaching to setup power managed profile based on optimal and flexible balance between radio bandwidth and power as taught by Wu in order to requirements of users.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianye Wu whose telephone number is (571)270-1665. The examiner can normally be reached on Monday to Thursday, 8am to 7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jianye Wu/

Examiner, Art Unit 2416

/Kevin C. Harper/
Primary Examiner, Art Unit 2416